Volume 15

Study G-I
Job R-IV-D
Study A-I

STATE OF ALASKA

William A. Egan, Governor

Annual Report of Performance for

INVENTORY AND CATALOGING

DISSEMINATION OF INFORMATION COLLECTED ON DOLLY VARDEN

INVESTIGATIONS OF PUBLIC FISHING ACCESS AND AQUATIC HABITAT REQUIREMENTS

by

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ALASKA DEPARTMENT OF FISH AND GAME

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DIVISION OF SPORT FISH

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RESEARCH PROJECT SEGMENT

State:	ALASKA	Name:	Sport Fish Investigations of Alaska.
Project No.:	F - 9 - 6		
Study No.:	G - I	Study Title:	INVENTORY AND CATALOGING
Job No.:	G - I - B	Job Title:	Inventory and Cataloging of the Sport Fish Waters in Southwest Alaska

Period Covered: July 1, 1973 through June 30, 1974

ABSTRACT

Physical, chemical and biological surveys were initiated on eight Afognak Island lakes and five streams. Follow-up surveys were conducted on two Afognak Island lakes previously surveyed in 1971.

Kodiak Island lakes were sampled with gill nets to determine species occurrence, relative abundance, and size of native and stocked fish.

The Buskin River Dolly Varden, Salvelinus malma, outmigration commenced on May 1 and ended June 1. Anglers harvested 14,269, or 1.94 char per hour, during the spring fishery. An additional 6,631 char were caught in the Buskin River during the remainder of the fishing season. A sample of 591 sport caught fish averaged 321 mm in length and ranged from 199-505 mm.

From January 1 through October 15 anglers fishing Kodiak Island waters harvested approximately 36,826 Dolly Varden, 963 sockeye salmon, Oncorhynchus nerka, 4,230 pink salmon, O. gorbuscha, 1,005 chum salmon, O. keta, and 2,826 coho salmon, O. kisutch.

RECOMMENDATIONS

1. Continue the inventory and cataloging program with major emphasis on the lakes and streams on Afognak Island within the proposed boundaries of the Peronosa Bay Timber sale.

2. Discontinue intensive creel census surveys on all streams except Pasagshak River and Buskin River.

3. Evaluate the survival and growth trends and quality of fishing produced by various broods of stocked rainbow trout.

4. Evaluate growth and survival of grayling stocked in Roslyn Creek and Kodiak area lakes.

5. Determine the age composition of coho salmon from streams adjacent to the Kodiak Island road system.

OBJECTIVES

1. To determine the physical, chemical, and biological characteristics of existing and potential sport fishing streams and lakes in the Kodiak area.

2. To establish magnitude, distribution, timing, yearly fluctuations and angler harvest of sport fish populations on the Karluk River, Ayakulik River (Red River), northeastern Kodiak Island, and areas of concern to fishery management.

3. To investigate, evaluate, and develop plans for the enhancement of anadromous and resident fish stocks.

4. To assist as required in the investigation of public access status to the area's sport fishing waters and make specific recommendations for public fishing access sites.

PROCEDURES

Techniques as described by Murray and Van Hulle (1973) were used in lake surveys, analysis of water samples, gill net sampling, capturing chinook salmon at Ayakulik River, and in determining fish size information.

A partial creel census was conducted during the spring Dolly Varden and sockeye salmon fishing season (April 17 through July 8) on Buskin River. Census clerks interviewed anglers at primary access points to the river and obtained fish size and catch per unit of effort data. Interviewers also determined the type of license an angler possessed, whether the license had been purchased in Kodiak, or if the angler was a juvenile (16 years old or younger). A postal questionnaire (as shown in Figure 1) was mailed to 26% of the anglers who purchased their fishing license in Kodiak prior to July 15 to determine the number of times individual anglers fished the streams. Final harvest estimates were obtained by expanding the number of angler trips by the catch per angler trip observed by the census clerks. The approximate harvest by juveniles or anglers that purchased a license out of Kodiak was calculated by expanding the local, licensed angler harvest by the observed percent of harvest for each group.

/__/ I did not fish for Dolly Varden in 1973.

/__/ I fished Dolly Varden	No.Times Fished	No.Fish Caught
Buskin River	_____	_____
Pasagshak R. (Lake Rose Tead)	_____	_____
Saltwater Area	_____	_____
Other Streams	_____	_____

/__/ I did not fish for Red Salmon in 1973.

/__/ I fished Red Salmon	No.Times Fished	No.Fish Caught
Buskin River	_____	_____
Pasagshak R.	_____	_____
Other Streams	_____	_____

Signed.....

FIGURE 1. Postal Questionaire Used to Sample Anglers Holding a Valid Fishing Permit from January 1 to July 15.

I -did/did not- fish for salmon in 1973. I -did/did not- fish for Dolly Varden in 1973.

River	No.Times Fished	Total No. Fish Caught: Pink S.	Dog S.	Silver S.	Dolly Varden
American	_____	_____	_____	_____	_____
Buskin	_____	_____	_____	_____	_____
Kalsin	_____	_____	_____	_____	_____
Olds	_____	_____	_____	_____	_____
Pasagshak	_____	_____	_____	_____	_____
Roslyn	_____	_____	_____	_____	_____
Saltery	_____	_____	_____	_____	_____
Solonie	_____	_____	_____	_____	_____
Other Streams	_____	_____	_____	_____	_____
Saltwater	_____	_____	_____	_____	_____

Any comments or recommendations you have regarding the Kodiak Sport fishery would be appreciated:_____

_____

Signed.....

FIGURE 2. Postal Questionaire Used to Sample Anglers Holding a Valid Fishing Permit from January 1 to October 15.

From August 18 to October 15, coho salmon harvest information was obtained by a modification of the method described by Neuhold and Lu (1957). Seven streams were censused on two weekdays and on both weekend days during the time period 7:00 a.m. to 2:30 p.m. and 2:31 p.m. to 10:00 p.m. The census time periods were alternated to obtain morning, day, and evening use estimates for each stream. An instantaneous angler count was made every 2.0 hours on the stream being censused and completed anglers were interviewed to determine catch per unit of effort and the type of fishing license used. Final harvest and use estimates were calculated by expanding the observed estimates by the total possible fishing hours in the season. Weekend and weekday data were treated separately. Coho salmon taken by anglers were sampled for age, sex, and size.

Only two of the seven streams, Buskin River and Pasagshak River, received enough fishing pressure to warrant statistical treatment of the data. A postal questionnaire (as shown in Figure 2) was sent to 21% of the local license holders to determine the total catch of all salmon and Dolly Varden from Kodiak Island. Total harvest estimates for 1973 pink salmon, chum salmon, and Dolly Varden fisheries were computed from postal questionnaire data for five roadside streams, other streams, and the saltwater areas. Postal estimates were divided by bias factors of 3.70 and 3.89 on Buskin River and Pasagshak River, respectively. The bias were calculated by dividing the postal survey reported catch by the censused catch.

FINDINGS

Lake and Stream Surveys

Field surveys were initiated on eight unnamed lakes on Afognak Island and completed on Laura Lake, Gretchen Creek, and Gretchen Lake. Tables 1 and 2 present basic survey data on the unnamed lakes and Table 3 summarizes all sampling data for the Laura Lake-Gretchen Lake system (original surveys summarized by Van Hulle, 1972).

The lakes listed in Tables 1 and 2 are neutral to slightly alkaline and low in dissolved solids. They appear to be of glacial "kettle" origin surrounded by spruce-covered moraines. All of the lakes contain Dolly Varden, Salvelinus malma, and threespine stickleback, Gasterosteus aculeatus, except Lake No. 13499 (barren).

The lakes on Kodiak and Afognak Island having natural rainbow trout, Salmo gairdneri, are all characterized by having inlets and/or outlets capable of rearing fish. Similar observations were made on the lakes listed in Tables 1 & 2, and 3. Lakes No. 13499 to 13558 have limited spawning and rearing areas in the outlets and tributaries, but contain no trout. Lake No. 13566, Gretchen Lake, and Laura Lake contain rainbow trout and have extensive rearing areas in the inlets and outlets.

Overnight minnow trap sets were made in four streams flowing into Discoverer Bay to determine salmon species composition (Figure 3). These streams were known to contain pink salmon, O. gorbuscha, but observations this year indi-

TABLE 1. Location and Physical Characteristics of Eight Lakes Surveyed on Afognak Island, June 14 to August 8, 1973.

Lake No. & Location	Drains To	Surface Acres	Approximate Volume (Acre/Foot)	Mean Depth (Ft.)	Fish Species Present*	Catch/ Hour**
No. 13543 T21S, R18W, Sec. 7	Seal Bay	8.0	176	22	DV SB	N-0.11 Observed
No. 13544 T21S, R18W, Sec. 7	Seal Bay	19.4	446	23	DV SB SC	N-0.11 T-0.14 T-0.01
No. 13548 T21S, R18W, Sec. 18	Seal Bay via No. 13547	8.74	70	8	DV SB	N-0.09 Not Observed
No. 13547 T21S, R18W, Sec. 17	Seal Bay	44.4	800	18	DV SB SC	N-0.15 T-0.58 T-0.04
No. 13557 T21S, R18W, Sec. 11	Pauls Lake via No. 13558	16.0	320	20	SB DV	Observed Observed
No. 13558 T21S, R18W, Sec. 11	Pauls Lake	16.8	353	21	DV SB	N-0.50 Observed
No. 13499 T22S, R19W, Sec. 18	Portage Lake	17.0	255	15 (App.)	Sampled with hook & line No fish observed	
No. 13565 Otter Lake T21S, R19W, Sec. 29	Discoverer Bay	140.0	2,100	15	RT DV SB	N-0.13 N-1.87 Observed

* DV = Dolly Varden
SB = Threespine stickleback
SC = Sculpin
RT = Rainbow Trout

** N = Standard Monofilament Gill Net
T = Minnow Trap

TABLE 2. Water Quality Analysis of Eight Lakes Surveyed on Afognak Island, June 14-August 8, 1973.

	No. 13543	No. 13544	No. 13548	No. 13547	No. 13557	No. 13558	No. 13499	No. 13565
CO_2	8 ppm	8 ppm	20 ppm	10 ppm	10 ppm	24 ppm	-	4 ppm
T. Alk.	50 ppm	50 ppm	50 ppm	55 ppm	60 ppm	70-80 ppm	-	50 ppm
$CaCO_3$	30 ppm	30 ppm	25 ppm	25 ppm	30 ppm	30 ppm	-	20 ppm
pH	7.2	7.1	7.0	7.3	7.3	7.1	-	7.4
Color	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Turbidity	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Odor	No	No	No	No	No	No	No	No

Table 3. Fish Sampling Data for Laura Lake, Gretchen Lake, and Gretchen Creek.

Date	Gear	Fish*	Age	No.	Effort	Length (mm) Range	Mean
Laura Lake							
7-8 to 7-9-71	Gill Net	DV	Not aged	3	44.0	162-242	208
6-6 to 6-7-73	Gill Net	DV	2.0+	2	43.4	127-128	-
		DV	3.0+	3		173-192	181
		DV	4.0+	1		238	-
		DV	5.0+	2		218-245	232
		SS	2.0+	2		121-122	-
6-7 to 6-8-73	Gill Net	RT	4.0+	1	48.0	252	-
		RT	8.0+	1		493	-
		DV	5.0+	1		192	-
		SS	2.0+	11		120-198	120
6-13 to 6-14-73	Gill Net	DV	4.0+	2	25.0	144-196	170
		DV	5.0+	1		175	-
		DV	7.0+	1		204	-
		SS	2.0+	11		117-129	124
Gretchen Lake							
7-7 to 7-8-71	Gill Net	RT	Adult	1	46.7	380	-
		DV	-	11		108-234	141
		SS	Smolt	5		105-120	111
7-7 to 7-8-73	Gill Net	RT	1.0+	3	4.5	138-188	164
		RT	3.0+	1		320	320
		DV	-	17		170-225	200
7-7 to 7-8-73	Hook & Line	RT	2.0+	2	2.0	242	-
		RT	3.0+	1		305	-
		RT	4.0+	1		460	-
		DV	-	6		----	-
Gretchen Creek							
7-7-73	Hook & Line	RT	1.0+	10	2.5	135-200	
		RT	2.0+	4		182-223	
		RT	3.0+	4		248	
7-7 to 7-8-73	Minnow Trap	RT	1.0+	13	120	110-183	136
		DV	-	Over 100 released			

*DV = Dolly Varden
SS = Sockeye salmon
RT = Rainbow trout
CS = Coho salmon

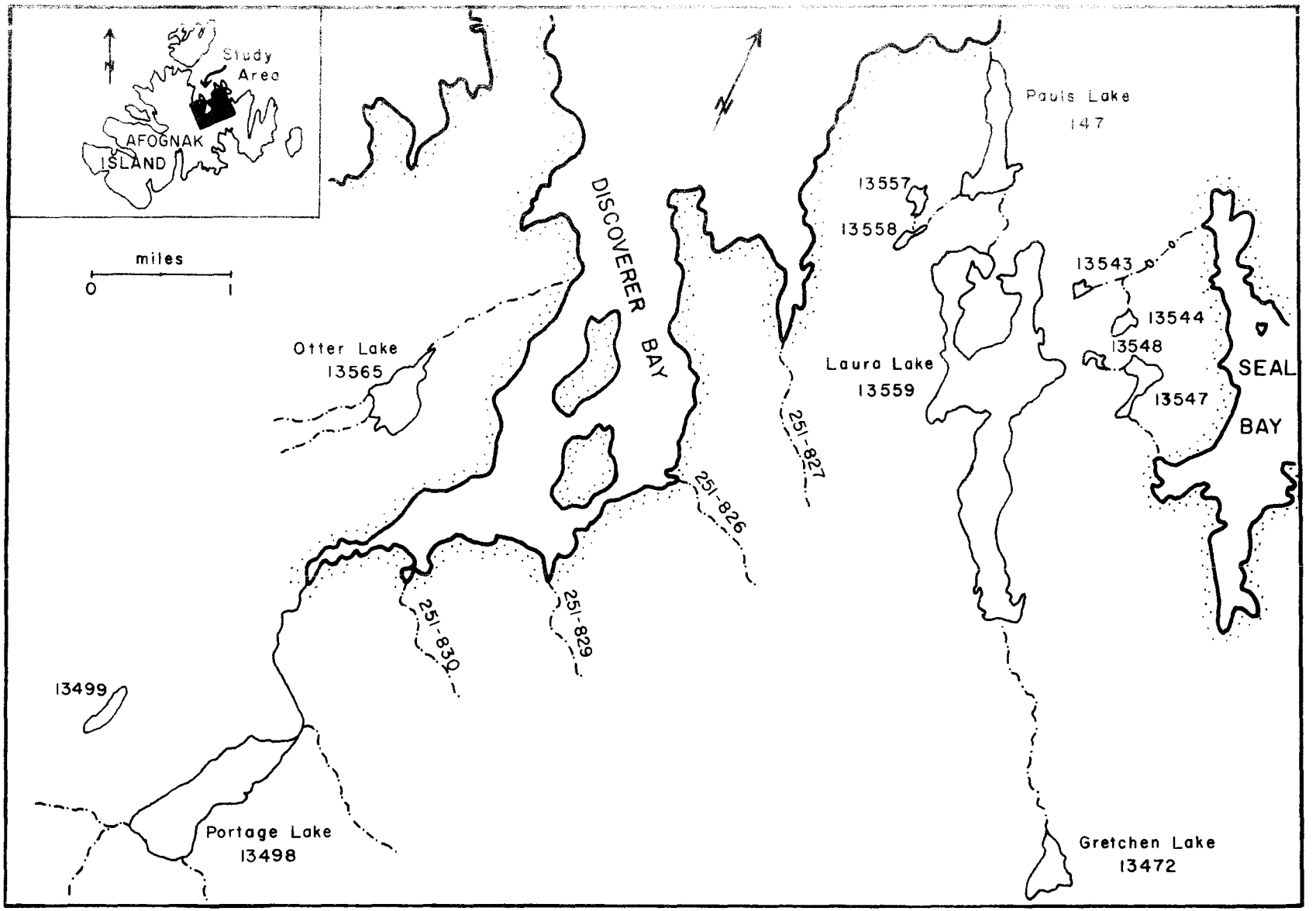

FIGURE 3. Location Map of Lakes and Streams Surveyed on Afgnak Island, 1973.

cated streams 251-827, 251-826, and 251-829 also supported rearing coho salmon, O. kisutch, and Dolly Varden trout. Stream 251-830 contained only pink salmon.

These data, including complete lake surveys, fish sampling data, chemical and related information are listed in an unpublished report (Van Hulle, August 8, 1973) to the U. S. Forest Service. This report is available in the Regional and District Sport Fish offices.

The test netting data in Table 4 indicate good survival and growth of stocked fish in most of the lakes through the second growing season; however, stocked trout are normally harvested or lost from the fishery by age class 3.0. Natural reproduction of grayling in Aurel and Cascade lakes appear more successful than noted for rainbow trout and appears adequate to maintain a fishery. Island Lake and Dark Lake show good reproduction of rainbow trout and additional stocking is not recommended. Barry Lagoon, Doldoi Lake and Long Lake produced naturally spawned coho salmon; however, production appears inadequate to maintain a viable sport fishery. After 22 net hours, Mayflower Lake failed to produce any of the coho salmon stocked in 1971 (2500 @ 500/pound) or 1972 (2300 @ 222/pound); however, a sample of 10 salmon were collected by hook and line, in 0.25 hours on December 14, 1973. These fish were age class 2.0 (n=3) and 3.0 (n=7). Length averaged 121 and 135 mm, respectively.

Assessment and Inventory of Anadromous Fish Populations

Buskin River Dolly Varden and Salmon:

Foot surveys and interviews with Buskin River anglers indicated that the Dolly Varden migration from Buskin Lake commenced May 1 and continued until about June 1. Interviews with 98 fishermen who had completed fishing in the period from May 2 to May 30 indicated an average harvest rate of 1.94 fish per angler hour. A sample of 591 Dolly Varden indicated that length varied from 199-505 mm and averaged 321 mm. The total harvest, as calculated from the postal survey and completed angler interviews, was 20,900 Dolly Varden with 14,269 (68.3%) caught in the spring fishery. From June 1 to July 8, a total of 277 completed anglers were interviewed on the Buskin River and the total extrapolated catch for the period was 632 sockeye salmon, O. nerka. Sex and size data from 12.97% (n=83) for the total catch are presented in Table 5. The data in Table 5 indicate a 1.1:1 male:female ratio with females averaging slightly smaller (4.7 cm) than males. Age classes 2.3 and 1.3 comprised 21.95% and 60.97%, respectively, of the total catch.

Skiff and foot surveys of the Buskin Lake drainage on August 14 indicated a total spawning escapement of 2,900 sockeye salmon.

Salmon and Dolly Varden, Harvest and Escapement

An aerial survey (September 19) and foot survey (October 31) indicated that 1,200 to 1,300 coho salmon spawned in the Buskin River system during 1973.

Creel checks, angler interviews, and instantaneous angler counts during the August-to-November sport fishery provided an estimated catch of 753 coho. Harvest and size data are presented in Tables 6 and 7.

TABLE 5. Population Characteristics of Kodiak Area Lakes as Defined by Variable-Mesh Gill Nets, 1973

Lake Name & Location	Date Sampled	Sampling Data: Species*	Number	Age Class	Length (mm) Range/Mean	Catch/ Net Hr.	History: Date Stocked	Total Number	Per Lb.	Per Acre
Aurel	7/19/73	GR	11	2.0	177-216/199	0.286	Natural Reproduction, 1971			
T28S, R21W		GR	4	3.0	282-297/290	0.104	Natural Reproduction or Migrants			
Sec. 36							From Cicely Lake			
		RT	1	1.0	111	0.026	Natural Reproduction, 1972			
		RT	1	2.0	302	0.026	7-27-71	3000	306	200
Cicely	7/19/73	GR	3	3.0	232-277/260	0.164	6-3-70	10000	Sac Fry	1786
T28S, R21W										
Sec. 36										
Cascade	7/20/73	GR	11	2.0	229-255/238	0.458	Natural Reproduction, 1971			
T27S, R21W		RT	1	1.0	111	0.042	Natural Reproduction, 1972			
Sec. 12		RT	6	2.0	197-238/216	0.250	7-29-71	3000	543	182
		RT	1	3.0	347	0.042	Natural Reproduction, 1970			
Barry Lagoon	7/17/73	CS	1	1.0	162	0.046	Natural Reproduction, 1971			
T31S, R19W		CS	2	4.0	430-436/433	0.092	6-27-69	15950	640	125
Sec. 28		DV	17	**	136-361/268	0.782	Natural Reproduction			
Beaver (Bridge)		RT	18	1.0	89-157/135	9.000	8-11-72	600	556	300
T28S, R20W	7/19/73	RT	1	2.0	268	0.500	6-10-71	600	302	300
Sec. 31		DV	6	**	121-268/188	3.000	Natural Reproduction			
Bull Lake	7/17/73	RT	12	1.0	103-209/164	0.558	8-11-72	2000	556	202
T31S, R20W		RT	4	2.0	235-248/243	0.186	6-10-71	2000	302	202
Sec. 35										
Caroline	7/19/73	RT	6	1.0	94-106/99	0.296	8-11-72	1300	556	196
T28S, R21W										
Sec. 36										
Dark	7/16/73	RT	15	1.0	91-181/121	0.600	Natural Reproduction, 1972			
T27S, R19W		RT	1	2.0	255	0.040	Natural Reproduction, 1971			
Sec. 28		DV	8	**	121-231/170	0.320	Natural Reproduction			

TABLE 4. Population Characteristics of Kodiak Area Lakes as Defined by Variable Mesh Gill-Nets, 1973, Cont.

Lake Name & Location	Sampling Data: Date Sampled	Species*	Number	Age Class	Length (mm) Range/Mean	Catch/ Net Hr.	History: Date Stocked	Total Number	Per Lb.	Per Acre
Lilly T28S, R20W Sec. 27	7/16/73	CS	4	2.0	246-311/287	0.210	6-16-71	1000	591	127
		RT	3	1.0	153-177/163	0.158	8-23-72	2000	556	254
Long T27S, R19W Sec. 34	7/13/73	CS	1	3.0	303	0.167	Natural Reproduction, 1969			
		RT	1	1.0	104	0.167	8-24-72	2000	556	55
		DV	8	**	174-340/255	1.333	Natural Reproduction			
Louise T28S, R20W Sec. 10	7/16/73	SS	1	1.1	379	0.059	Natural Reproduction, 1970			
		SS	5	1.2	520	0.294	Natural Reproduction, 1969			
		CS	2	1.0	174	0.118	Natural Reproduction, 1971			
		DV	6	**	301-336/324	0.353	Natural Reproduction			
Lupine T21S, R20W Sec. 35	7/17/73	RT	5	1.0	90-107/98	0.222	8-11-72	1500	556	200
		RT	13	2.0	179-238/204	0.578	6-10-71	1500	302	200
		RT	1	3.0	375	0.044	8-26-70	1500	398	200
Mayflower T29S, R20W	7/17/73	DV	2	**	270-364/312	0.090	Natural Reproduction			
Orbin T28S, R20W Sec. 31	7/18/73	RT	6	1.0	98-173/147	0.162	Migrants from 1971 and 1972 plants into Beaver Lake or Natural Reproduction			
		RT	2	2.0	278-295/287	0.054				
		RT	1	3.0	342	0.027	Natural Reproduction, 1970			
		DV	30	**	129-307/204	0.811	Natural Reproduction			
Pony T29S, R19W Sec. 36	7/19/73	CS	4	1.0	105-152/119	0.158	6-16-72	2800	591	196
Saturn T30S, R18W Sec. 18	7/19/73	RT	16	1.0	83-109/99	0.762	6-23-73	2400	556	205

TABLE [illegible] Population Characteristics of Kodiak Area Lakes as Defined by Variable-Mesh Gill Nets, 1973, Cont.

Lake Name & Location	Date Sampled	Species*	Number	Age Class	Length (mm) Range/Mean	Catch/ Net Hr.	History Date Stocked	History Total Number	History Per Lb.	History Per Acre
Devils	7/16/73	RT	9	1.0	133-152/143	0.480	8-22-72	1400	556	443
T28S, R20W		DV	8	**	159-269/190	0.427				
Sec. 3										
Dolgoi	7/11/73	CS	1	1.0	161	0.010	Natural Reproduction, 1971			
T28S, R19W		DV	13	**	116-349/261	0.129	Natural Reproduction			
Sec. 12										
Dragonfly	7/18/73	RT	1	3.0	311	0.053	8-11-72	1600	556	210
T28S, R20W		RT	5	2.0	173-210/193	0.267	6-10-71	1600	302	210
Sec. 34		RT	13	1.0	97-142/108	0.693	8-26-70	1600	398	210
		DV	1	**	171	0.053	Natural Reproduction			
Horseshoe	7/18/73	RT	20	1.0	90-113/101	0.037	8-11-72	1400	556	291
T28S, R20W		RT	9	2.0	158-207/181	0.330	6-10-71	1400	302	291
Sec. 35										
Island	7/20/73	RT	1	1.0	114	0.125	Natural Reproduction, 1972			
T27S, R19W		RT	2	2.0	250	0.250	Natural Reproduction, 1971			
Sec. 21		RT	1	3.0	328	0.125	Natural Reproduction, 1970			
		DV	2	**	212	0.250	Natural Reproduction,			
		CS	1	1.0	160	0.125	Natural Reproduction, 1971			
Jack	7/18/73	RT	41	1.0	88-192/107	1.907	8-11-72	900	556	191
T28S, R21W										
Sec. 36										
Jupiter	7/19/73	RT	8	1.0	83-161/103	0.364	8-11-72	3600	556	206
T30S, R18W										
Sec. 18										
Lee	7/18/73	RT	1	5.0	455	0.047	'68	2860	1430	200
T28S, R21W			1	3.0	320	0.047	Natural Reproduction, 1970			
Sec. 36			1	2.0	187	0.047	Natural Reproduction, 1971			
			2	1.0	139	0.093	8-11-72	2800	556	196

TABLE 4. Population Characteristics of Kodiak Area Lakes as Defined by Variable Mesh Gill Nets, 1973, Cont.

Lake Name & Location	Date Sampled	Sampling Data: Species*	Number	Age Class	Length (mm) Range/Mean	Catch/ Net Hr.	History: Date Stocked	Total Number	Per Lb.	Per Acre
Snag	7/17/73	RT	1	3.0	257	0.053	8-11-72	1500	556	300
T28S, R20W		RT	5	2.0	210-236/221	0.267	6-10-71	1500	302	300
Sec. 35		RT	23	1.0	85-177/140	0.053	8-26-70	1500	398	300
		CS	3	1.0	122-167/138	0.160	Inadvertently Stocked with RB on 8-11-72			
		DV	1	**	265	0.053	Natural Reproduction			
Southern	7/11/73	CS	16	1.0	107-173/169	0.333	8-11-72	3300	222	187
T28S, R19W		CS	52	2.0	191-263/207	1.083	6-16-71	3500	591	200
Sec. 14										
Tanignak	7/11/73	RT	2	4.0	317-350/334	0.024	7-3-69	6500	2480	218
T27S, R19W		RT	1	1.0	122-195/168	0.012	8-11-72	6500	556	218
Sec. 3										

* DV = Dolly Varden
GR = Grayling
RT = Rainbow Trout
CS = Coho salmon
ss = Sockeye salmon

** Fish were not aged

TABLE 5. Age and Size of Angler Caught Sockeye Salmon, Buskin River, June 4 to July 5, 1973.

	Age	Brood* Year	No.	Length (cm) Range	Length (cm) Mean	Weight (kg)** Range	Weight (kg)** Mean	%
Male:	2.3	1967	10	57.3-63.3	59.9	2.5-4.5	3.77 (n=19)	23.2
	2.2	1968	2	52.5-55.0	--	---	--	4.6
	1.3	1968	28	51.5-64.3	59.3	2.5-4.5	3.47 (n=9)	65.1
	1.2	1969	3	50.7-56.0	52.9	---	--	7.1
Female:	2.3	1967	8	47.5-57.4	55.1	2.0-3.8	2.66 (n=5)	20.5
	2.2	1968	3	47.5-60.5	53.1	1.5-2.3	1.75 (n=3)	7.7
	1.3	1968	22	52.8-60.4	56.5	1.8-3.7	2.81 (n=19)	56.4
	1.2	1969	6	46.6-50.0	48.3	1.5-2.0	1.75 (n=3)	15.4

* Brood year = year of parent escapement
** Weights expressed only for salmon which had not been dressed (n=x)

TABLE 6. Coho Salmon Harvest and Escapement Estimates of Seven Roadside Streams Near the City of Kodiak, 1973.

System	Date	Survey Method	Spawning Escapement Count	Spawning Escapement Estimate	Est. Sport Catch	Est. Total Run
American River	10/ 9/73	Foot	31	50	42	92
Buskin Lake	10/31/73	Foot	930	1,250	753	2,003
Halsin R. (& Pond)	10/ 4/73	Foot	23	73	49	122
Olds River	10/ 4/73	Foot	147	252	6	258
Lake Rose Tead (Pasagshak)	10/ 3/73	Foot	1,829	2,350	1,129	3,479
Roslyn River	10/ 3/73	Foot	17	30	74	104
Salonie Creek	10/ 9/73	Foot	69	75	88	163
Total			3,046	4,080	2,141	6,221

TABLE 7. Age and Size Composition of Silver Salmon Sampled Concomitant with Kodiak Area Creel Census, 1973.

	Age	Brood* Year	No.	Length (cm) Range	Length (cm) Mean	Weight (kg) Range	Weight (kg) Mean	%
Buskin River								
Male:	3.0	1969	2	33.0 - 38.0	--	3.5		6.9
	2.1	1969	25	59.5 - 74.5	65.6	3.5 - 6.0	4.7	86.2
	1.1	1970	2	56.7 - 65.2	--	3.3 - 5.5	4.4	6.9
Female:	2.1	1969	34	55.9 - 71.2	64.7	3.5 - 6.3	4.8	100.0
Pasagshak River - Lake Rose Tead								
Male:	2.1	1969	38	57.2 - 73.7	64.7	3.8 - 7.8	5.5	48.1
	1.1	1970	17	58.4 - 66.8	62.8	2.5 - 6.4	4.4	21.5
	2.0	1970	24	36.2 - 43.0	38.4	0.7 - 1.8	1.1	30.4
Female	3.1	1968	1	62.2 - --	--	1.8	-	1.8
	2.1	1969	42	52.7 - 67.5	63.3	3.4 - 6.5	4.9	76.4
	1.1	1970	12	58.4 - 68.6	63.0	3.8 - 5.5	4.9	21.8
Paisin River and Lagoon								
Male:	2.0	1970	4	36.2 - 40.8	38.0	0.8 - 1.3	1.0	100.0
Female:	1.1	1970	3	54.0 - 61.0	58.7	2.5 - 3.8	3.3	50.0
	2.1	1969	3	53.5 - 66.0	59.5	2.5 - 4.5	3.6	50.0
Sid Olds River								
Male:	2.1	1969	2	61.0 - 62.8	--	4.0	--	100.0
Female	1.1	1970	2	64.5 - 65.0	--	4.7 - 5.0	--	66.7
	2.1	1969	1	64.0	--	7.0	--	33.3
Roslyn River								
Male:	2.1	1969	1	59.0	--	3.3	--	100.0
Female	1.1	1970	2	66.0 - 70.5	--	6.2 - 6.3	--	100.0
Salonie Creek								
Female:	1.1	1970	4	56.5 - 69.0	63.0	2.3 - 4.3	3.2	100.0

* Year of Parent Escapement

Coho salmon harvest and escapement estimates were made on seven Kodiak Island streams. Data in Table 6 indicate a normal harvest trend with the sport catch being proportional to the total escapement. Lake Rose Tead (Pasagshak), and Buskin River had excellent spawning escapements. They produced approximately 75% of the coho harvested in the 1973 roadside sport fishery.

As indicated in Table 7, an estimated 17.9% (n=24) of the Lake Rose Tead coho salmon were age class 2.0 (jacks), 44% (n=59) were designated age class 2.1 and 21.6% (n=29) were designated age class 1.1. The samples from Malsin, Sid Olds, Roslyn, and Salonie rivers are small and probably not representative of the adult populations; the samples do show a preponderance (61.1%) of age class 1.1 adults (excluding jacks), however. Coho salmon in Kodiak Islands small streams have never been intensively studied and we have assumed for management purposes that age composition of the smaller populations was similar to Buskin River (i.e., basically age class 2.1 adults). More length and size data will be collected and basic life history assumptions re-evaluated.

Table 8 presents the total Kodiak area Dolly Varden and salmon harvest estimates as determined by instantaneous counts, interviews of completed anglers, and two postal surveys. The postal estimates are divided by the bias factors (3.70 and 3.89) observed on Buskin River and Pasagshak River, respectively. Valid or completed cards were returned from 28.90% and 32.64% of the anglers sampled during the first and second surveys, respectively. The positive bias probably resulted from unsuccessful anglers not responding to the questionnaire, inaccurate recording of data, and multiple recording on one card.

The 1973 harvest of sockeye salmon, coho salmon and Dolly Varden probably reflects normal harvest: escapement allocations for Kodiak roadside areas. The pink salmon and chum salmon, O. keta, catches were reduced by an August 8 emergency closure of all salt and fresh water areas adjacent to the road system. By mid-August, pink salmon and chum salmon escapements were dangerously low, and commercial and subsistence fishery closures were also initiated. The saltwater areas were open to sport and subsistence fishing on August 28 after escapements were determined adequate.

The freshwater sport harvest of pink salmon accounted for approximately 1.5% of the total escapements into the streams listed in Table 8. The 1973 harvest was probably less than would be expected during years of normal or high escapements. In spite of low escapements, anglers (n=18) on the American River harvested 0.45 fish per hour just prior to the stream closure. These limited observations indicate a good catch per unit of effort in spite of reduced pink salmon escapements.

Karluk River Chinook Salmon and Steelhead

Due to complications incurred in securing a land lease on the lower Karluk River, plans to weir the stream at the lagoon were cancelled.

TABLE 8. Harvest and Escapement Estimates of Salmon and Dolly Varden, NE Kodiak Is. 1973.

River	Sockeye Salmon		Pink Salmon		Chum Salmon		Coho Salmon		Dolly Varden
	Harvest	Escp**	Harvest	Escp.	Harvest	Escp.	Harvest	Escp.	Harvest
American	-	-	344	10500	150	3500	42	50	1084
Buskin	632	2900	685	10000	202	No.Est.	753	1250	20900
Kalsin	-	-	105	12000	20	5250	49	73	1229
Olds			159		47		6	252	160
Pasagshak	56	200	1004	No.Est.	78	No.Est.	1129	2350	2134
Roslyn	-	-	123	600	0	600	74	30	595
Saltery***	-	13000	320	15000	197	17250	376	No.Est.	4345
Salonie	-	-	27	1000	0	1500	88	75	84
Other Streams	275	-	489	-	76	-	76	-	2361
Salt Water	-	-	974	-	235	-	233	-	3934
TOTAL	963	16100	4230	49100	1005	28100	2826	4080	36826

** Escapements are based on the highest count observed during the spawning period.

*** Harvest calculated from Postal Questionaire data only.

Cursory observations of the Karluk River sport fishery indicate a harvest of approximately 200 chinook salmon, O. tshawytscha, and 100 steelhead trout. An August 15 escapement estimate accounted for 3,000-4,000 chinook salmon in Karluk River.

Ayakulik King Salmon and Steelhead

The Ayakulik River weir was installed June 2 and removed August 15. Chinook salmon passed through the weir site prior to the first and after the last weeks of weir operation. A total of 1,262 chinook salmon were counted through the weir gates and 99 fish were sampled for sex and size data, which is presented in Table 9.

Chinook salmon with a saltwater residency of one and two years were not sampled at the weir and were probably mis-identified as sockeye salmon by the counters. Age classes 1.4 (58.8%) and 1.3 (23.5%) comprised the majority of males with age class 1.4 accounting for 83.1% of the females.

Public Access To Sport Fishing Waters

A memorandum of understanding between the Kodiak Coast Guard Station and the Alaska Department of Fish and Game was drafted and is in the final formulative stages. According to the plan, properly licensed civilians will be allowed access to the station to sport fish and hunt. Department of Fish and Game and Department of Public Safety personnel will have enforcement authority on the station.

Formal requests of Alaska Department of Fish and Game to delay patent on a homestead entry encompassing the lower Pasagshak River were denied. Requested monetary allocations to purchase access to the river are being considered.

Historical records of the utilization of this area are being compiled and documentation of the current sport fishery on the stream is being accomplished so that purchase of the property can be reconsidered.

TABLE 9. Age and Size Composition of King Salmon Sampled at the Ayakulik River Weir, 1973.

	Age	Brood* Year	No.	Length (cm) Range	Length (cm) Mean	Weight (kg) Range	Weight (kg) Mean	%
Male:	2.4	1966	1	89.1	--	12.3	--	2.9
	1.5	1966	3	90.0- 99.0	96.2	12.9-19.7	16.6	8.8
	2.3	1967	2	69.5- 83.9	76.7	6.4-12.7	9.5	5.9
	1.4	1967	20	77.2-100.8	88.6	7.9-18.8	12.9	58.8
	1.3	1968	8	68.7- 79.1	73.9	6.3- 9.5	7.7	23.5
Female:	2.4	1966	2	87.2- 93.1	90.1	12.3-14.7	13.5	3.0
	1.5	1966	5	83.2- 93.6	90.9	13.6-16.4	15.0	7.8
	2.3	1967	1	76.0	--	6.8	--	1.5
	1.4	1967	54	80.8- 96.6	87.2	9.3-16.6	11.9	83.1
	1.3	1968	3	73.3- 86.3	79.4	7.3-10.8	8.7	4.6

* Year of Parent Escapement

LITERATURE CITED

Neuhold, John M. and Kuo H. Lu, 1957. Creel Census Method. Utah Department of Fish and Game, Publication No. 8. 36 pp.

Murray, John B. and Frank D. Van Hulle. 1973. Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Southwest Alaska. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Report of Progress, 1972-1973, Project F-9-5.

Van Hulle, Frank D. 1972. Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Southwest Alaska, Alaska Department of Fish and Game, Annual Report of Progress, 1971-1972, Project F-9-4, 13 (G-1): 17-41.

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